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ADP013853

TITLE: A Spatial Disorientation Survey of Hellenic Air Force Pilots

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ADP013843 thru ADP013888

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A Spatial Disorientation Survey of Hellenic Air Force Pilots

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SUMMARY

Introduction: Spatial disorientation (SD) continues to be a largely unyielding problem in military and civilian aviation. SD training remains the sole solution of coping with this effect. In order to have more efficient training, we asked pilots the illusion they have probably had experienced in their flying career, attempting to study the prevalence and incidence rates of illusions and their correlation with specific types of aircraft

Method: An anonymous questionnaire was distributed to pilots of Hellenic Air Force during their annual physical examination at Hellenic Air Force Center of Aviation Medicine, between December 2000 and June 2001. The questionnaire gathered information such as age, type of aircraft flown, flying experience. The pilots were asked to give the number of times they experienced each of the listed illusions. Statistical analysis was performed by using SPSS 8.0

Results: A total of 407 surveys were collected. The mean age of the participants was 31.4 ± 5.4 years old, and their flying experience 1012 ± 908 hours. The most common types of aircraft flown were F4 and A7. 140 pilots (34.4%) answered that they had never experienced any kind of illusion. Among the other 267 pilots, 71 reported that they had experienced 1 illusion (26.6%), 185 (69.3%) had experienced 2-10 different types of illusions and 11 above 10 different types of illusions (4.11%). The top 5 illusions reported were the leans (47.2%) primarily with F4, the Coriolis illusion (39%) primarily with F4, blending of earth and sky (38.2%) primarily with F4 and A7, flight instrument reversal (24.3%) primarily with F4 and sloping clouds or terrain (22.8%) primarily with F16 and A7. When asked to report their most personally critical illusion, 185 pilots responded. They classified the severity of their illusion to flight safety 111 (60%) as minor, 68 (36.75%) as significant and 6 (4.9%) as severe.

INTRODUCTION

Spatial disorientation (SD) continues to be a largely unyielding problem in military and civilian aviation. SD training remains the sole solution of coping with this effect. In order to have more efficient training, we asked pilots the illusion they have probably had experienced in their flying career, attempting to study the prevalence and incidence rates of illusions and their correlation with specific types of aircraft.

MATERIALS-METHODS

An anonymous questionnaire was distributed to pilots of Hellenic Air Force during their annual physical examination at Hellenic Air Force Center of Aviation Medicine, between December 2000 and June 2001. 407 pilots, all of which were men, served as participants. All of them were active-duty pilots.

A SD questionnaire was developed from a previous study (5). The questionnaire gathered information such as age, type of aircraft flown, flying experience. The pilots were asked to give the number of times they experienced each of the listed illusions. Each illusion was followed by a short definition. The pilots were also asked to report their most personally critical illusion. Statistical analysis was performed by using SPSS 8.0.

RESULTS

A total of 407 surveys were collected.

The mean age of the participants was 31.4 ± 5.4 years old, and their flying experience 1012 ± 908 hours.

The most common current aircrafts flown were F4 and A7 (18.2% and 16.1% retrospectively).

140 pilots (34.4%) answered that they had never experienced any kind of illusion.

Among the other 267 pilots, 71 reported that they had experienced only 1 type of illusion (26.6%), 185 (69.3%) had experienced 2-10 different types of illusions and 11 above 10 different types of illusions (4.11%). The top 5 illusions reported were the leans (47.2%) primarily with F4, the Coriolis illusion (39%) primarily with F4, blending of earth and sky (38.2%) primarily with F4 and A7, flight instrument reversal (24.3%) primarily with F4 and sloping clouds or terrain (22.8%) primarily with F16 and A7.

When asked to report their most personally critical illusion, 185 pilots responded. The top 5 illusions reported were the leans (23.8 %), the Coriolis illusion (12.97%), blending of earth and sky (11.9 %), sloping clouds or terrain (7.56%) and flight instrument reversal (7%).

When asked to classified the severity of their illusion to flight safety, 111 participants (60%) classified it as minor, 68 (36.75%) as significant and 6 (4.9%) as severe.

Almost all pilots reported that the tools that were used to recover from the illusion were their instruments.

DISCUSSION

The knowledge of the type of the most common experienced illusions and their correlation with specific type of aircraft flown or mission, will help having more realistic and effective training on which illusions to expect.

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